



Progress Energy

OCT 23 2008

SERIAL: BSEP 08-0138

10 CFR 50.73

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Subject: Brunswick Steam Electric Plant, Unit No. 2
Docket No. 50-324/License No. DPR-62
Licensee Event Report 2-2008-001

Ladies and Gentlemen:

In accordance with the Code of Federal Regulations, Title 10, Part 50.73, Carolina Power & Light Company, now doing business as Progress Energy Carolinas, Inc., submits the enclosed Licensee Event Report. This report fulfills the requirement for a written report within sixty (60) days of a reportable occurrence.

Please refer any questions regarding this submittal to Mr. Gene Atkinson, Supervisor - Licensing/Regulatory Programs, at (910) 457-2056.

Sincerely,

Edward L. Wills, Jr.
Plant General Manager
Brunswick Steam Electric Plant

LJG/ljg

Enclosure:

Licensee Event Report

Progress Energy Carolinas, Inc.
Brunswick Nuclear Plant
PO Box 10429
Southport, NC 28461

JE22
NPR

cc (with enclosure):

U. S. Nuclear Regulatory Commission, Region II
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NRC FORM 366 (9-2007)		U.S. NUCLEAR REGULATORY COMMISSION		APPROVED BY OMB NO. 3150-0104 EXPIRES 08/31/2010 <small>Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollect@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.</small>					
LICENSEE EVENT REPORT (LER) <small>(See reverse for required number of digits/characters for each block)</small>									
1. FACILITY NAME Brunswick Steam Electric Plant (BSEP), Unit 2				2. DOCKET NUMBER 05000324		3. PAGE 1 OF 5			
4. TITLE Automatic Reactor Scram Due to Turbine Power/Load Unbalance Actuation									
5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MONTH	DAY	YEAR	
08	30	2008	2008	-- 001 --	00	10	23	2008	
				8. OTHER FACILITIES INVOLVED					
				FACILITY NAME		DOCKET NUMBER			
						05000			
				FACILITY NAME		DOCKET NUMBER			
						05000			
9. OPERATING MODE 1		11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more)							
10. POWER LEVEL 100		<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)				
		<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)				
		<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)				
		<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)				
		<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)				
		<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)				
		<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)				
		<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER	Specify in Abstract below or in NRC Form 366A			
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)							
12. LICENSEE CONTACT FOR THIS LER									
FACILITY NAME Lee J. Grzeck, Senior Engineer – Licensing				TELEPHONE NUMBER (Include Area Code) (910) 457-2487					
13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT									
CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
14. SUPPLEMENTAL REPORT EXPECTED					15. EXPECTED SUBMISSION DATE		MO	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).				X	NO				
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)									
<p>On August 30, 2008, at 1503 hours Eastern Daylight Time (EDT), a Power/Load Unbalance (PLU) actuation caused the Turbine Control Valves (TCVs) and the Main Turbine Bypass Valves (BPVs) to cycle. The initial cycle resulted in BPV No. 1 partially opening while a second cycle resulted in four BPVs going full open. At that time, the order was given to insert a manual scram. An automatic scram signal occurred just as the operator was beginning to insert the manual scram. Reactor water level momentarily dropped below Low Level 1 (LL1) during the response, resulting in Primary Containment Isolation System (PCIS) Group 2 and Group 6 isolations. LL1 actuations occurred as designed. All control rods fully inserted and all systems responded as designed.</p> <p>This event is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A), as an event or condition that resulted in manual or automatic actuation of any of the systems listed in 10 CFR 50.73(a)(2)(iv)(B).</p> <p>The select cause of this event was the lack of adequate work controls for transmission maintenance activities due to an inaccurate perception of risk. The corrective actions to prevent recurrence include the revision of site procedures to provide additional work controls and improve risk assessment.</p>									

**LICENSEE EVENT REPORT (LER)
Continuation Sheet**

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Brunswick Steam Electric Plant (BSEP), Unit 2	05000324	2008	-- 001	-- 00	2 of 5

NARRATIVE

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].

INTRODUCTION

On August 30, 2008, at 1503 hours Eastern Daylight Time (EDT), a Power/Load Unbalance (PLU) actuation caused the Turbine Control Valves (TCVs) [JI] and the Main Turbine Bypass Valves (BPVs) [JI] to cycle. The initial cycle resulted in BPV No. 1 partially opening while a second cycle resulted in four BPVs going full open. At that time, the order was given to insert a manual scram. An automatic scram signal occurred just as the operator was beginning to insert the manual scram. Reactor water level momentarily dropped below Low Level 1 (LL1) during the response, resulting in Primary Containment Isolation System (PCIS) [JM] Group 2 and Group 6 isolations. The LL1 actuations occurred as designed. All control rods fully inserted and all systems responded as designed.

At 1747 hours on August 30, 2008, the NRC was notified of this event (i.e., Event Number 44453) in accordance with 10 CFR 50.72(b)(2)(iv)(B), as an event or condition that results in actuation of the reactor protection system (RPS) [JC] when the reactor is critical, and 10 CFR 50.72(b)(3)(iv)(A), as an event or condition that results in valid actuation of any of the systems listed in 10 CFR 50.72(b)(3)(iv)(B).

This event is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A), as an event or condition that resulted in manual or automatic actuation of any of the systems listed in 10 CFR 50.73(a)(2)(iv)(B).

EVENT DESCRIPTION*Initial Conditions*

Prior to the event, Unit 2 was in Mode 1 operating at approximately 100 percent rated thermal power.

Discussion

At approximately 1503 hours on August 30, 2008, Unit 2 annunciators 2-UA-23(5-1), Main Turbine Bypass Valve Open, and 2-UA-23(6-5), EHC Electrical Malfunction, were received. At the time of these alarms, Operators observed Bypass Valve No. 1 partially open and then close. The annunciators also cleared briefly. Approximately five to seven seconds later, all four Bypass Valves fully opened, accompanied by the same annunciators. An automatic reactor scram then occurred, followed by insertion of a manual scram (i.e., the Operators were moving to insert the manual scram when the automatic actuation occurred). Initial troubleshooting determined that cycling of the BPVs was the result of at least two short duration Power/Load Unbalance (PLU) monitor actuations in response to current transients within its generator output sensing circuit. While these current transients were captured by the Plant Process Computer, the actual source was not definitively identified.

The rate sensitive PLU circuit is used to detect the potential for rapid acceleration of the turbine before a measurable speed change has taken place. It does this by monitoring Main Generator [EL] output current

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NARRATIVEEVENT DESCRIPTION (continued)

(i.e., load) for rapid reductions when power level derived from first stage High Pressure Turbine pressure is greater than 40%. The rate sensitive PLU circuit and relays have a two-fold purpose:

- To initiate Control Valve closure under load rejection conditions that might lead to a rapid acceleration and turbine overspeed.
- To prevent any valve action under stable fault conditions which are self-clearing within a reasonable amount of time.

Load signal is provided to the PLU via the Electro-Hydraulic Control (EHC) [IT] cabinet which is connected to the Generator and Transformer relaying and metering control circuit. This circuit is supplied by two 25,000A to 5A current transformers on the "A" and "C" phases of the Main Generator outputs.

The most probable initiating event of the scram was the introduction of a short onto the Generator's current monitoring circuit during post-modification testing for an Engineering Change (i.e., EC 68642) that installed a new digital fault recorder to provide dynamic disturbance monitoring capability. The testing was being performed by a Transmission Maintenance technician working in a relay house in the switchyard.

The new recorder was connected to various inputs sources, including the Generator and Transformer Relaying and Metering control circuits, via a shorting type test device. This test device has a series of knife switches used to isolate the recorder from the main circuit. In the case of the Generator and Transformer Relaying and Metering control circuits, the test device shorted the main circuit in order to maintain its continuity, and provided for opening of the leads to the recorder. It also provided test terminals for communication with the recorder. This test device has 10 channels, two of which are part of the "A" phase current circuit and two of which are part of the "C" phase current circuit.

The actual short appears to have occurred while a test plug was being removed from the test device mentioned above during a brief time period when the plug was still electrically in contact with the test switch but the switch was not electrically isolated from the main circuit. This allowed an unidentified path to ground, via the test equipment, and resulted in a current transient of sufficient magnitude to actuate the PLU protective device within the EHC cabinet.

The PLU properly responded to the sensed Generator current changes and the EHC system responded to the PLU actuations as designed. Troubleshooting activities, including physical testing and visual inspections of the current transducers, test switch, and test plug, found no obvious problems. Continuity and meggering checks were performed on the A, B, and C phase circuits and no grounds were found. The troubleshooting concluded without finding a definitive source of the current transient.

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NARRATIVE**EVENT CAUSE**

No root cause was able to be determined for this event. The select cause of this event was the lack of adequate work controls for transmission maintenance activities due to an inaccurate perception of risk.

The PLU actuation and subsequent scram were the result of a current transient on the Generator and Transformer relaying and metering control circuit introduced during post-modification testing for EC 68642. Implementation of EC 68642 was undertaken without fully understanding the potential consequences of the work. As a result, adequate work controls for transmission maintenance activities were not established.

SAFETY ASSESSMENT

The safety significance of this condition is considered minimal. The plant is designed for this type of event and responded as expected for this condition. Safety system actuations functioned as designed and Operations personnel responded appropriately in accordance with procedures.

CORRECTIVE ACTIONS

The following corrective actions to prevent recurrence will be taken.

- NGGM-IA-0003, "Transmission Interface Agreement for Operation, Maintenance, and Engineering Activities at Nuclear Plants," will be revised, or other procedural controls will be established, to strengthen work control of transmission maintenance activities. This action is currently scheduled to be completed by December 15, 2008.
- OAP-025, "BNP Integrated Scheduling," will be revised to include responsibility to evaluate risk associated with work involving critical shared transmission components providing BSEP support functions, and to strengthen work control of transmission maintenance activities. This action is currently scheduled to be completed by December 15, 2008.

Additional corrective actions include the following.

- Develop standards for test blocks used by Transmission personnel, and implement in the field. This action is currently scheduled to be completed by March 15, 2009.
- Perform training needs analysis for Design Engineering to assess training on how to perform Risk Assessments in accordance with EGR-NGGC-0011, "Engineering Product Quality." This action is currently scheduled to be completed by December 15, 2008.

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NARRATIVEPREVIOUS SIMILAR EVENTS

A review of LERs and corrective action program condition reports for the past three years identified the following similar event.

- Nuclear Condition Report (NCR) 270475 documents an invalid Unit 1 Primary Containment Isolation System (PCIS) Group 1 actuation which occurred on March 15, 2008 (i.e., Event Notification 44213). This event occurred as a result of switchyard work associated with EC 63842 to replace the main generator output breakers 22A and 22B. However, the root cause of this event was determined to be a lack of effectiveness of prior actions taken to prevent Group 1 isolations during shutdown conditions. As such, the corrective action to prevent recurrence could not reasonably have been expected to prevent occurrence of the event reported in this LER.

COMMITMENTS

No regulatory commitments are contained in this report.